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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,083	11/19/2001	Brig Barnum Elliott	BBNT-P01-154	2889

28120 7590 09/06/2006

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EXAMINER	
PATHAK, SUDHANSHU C	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/022,083	ELLIOTT ET AL.	
	Examiner	Art Unit	
	Sudhanshu C. Pathak	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *June 23rd, 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5,7-12,14-17,19,22-27,30-39 and 41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-5, 7-12, 14-17, 19, 22-27, 30-37, 39 & 41* is/are rejected.

7)☒ Claim(s) *38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *November 19th, 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3-5, 7-12, 14-17, 19, 22-27, 30-39 & 41 are pending in the application.

2. Claims 2, 6, 13, 18, 20-21, 28-29 & 40 have been canceled.

Response to Arguments

3. Applicant's arguments filed on June 23rd, 2006, in regards to Claim1, have been fully considered but they are not persuasive. The Applicants arguments (Remarks, Page 12, lines 3-4), that the AAPA does not disclose or suggest a broadcasting signal ...., where the broadcasted signal has a low probability of detection by an unintended receiver", this is correct, however, the AAPA does disclose that beacons serve to alert a given receiving node that there may be one or more nodes in the proximity. Furthermore, the Beckwith reference discloses a wireless communication network implementing a spread spectrum technology (see rejection below), therefore, signals transmitted in the network are spread spectrum signal i.e. the broadcast signal (beacon) is a spread signal; it is inherent in a spread spectrum system for a spread signal to have a low probability of detection by an unintended receiver, since the unintended receiver does not know the PN code of the transmitted signal and therefore, the signal behaves as a noise signal.

The Applicants arguments (Remarks, Page 13, lines 6-16), that the motivation for combining the AAPA, Ramanathan, and Beckwith does not satisfy the 103 requirements, that the alleged motivation us merely a conclusory statement, this is incorrect. The motivation is not a conclusory statement, the motivation provided

".....to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication link between nodes during the node discovery process", this is a specific motivation so as to implement spread spectrum technology in a communications network. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

4. Applicant's arguments filed on June 23rd, 2006, in regards to Claim 5, have been fully considered but they are not persuasive. The Applicants arguments neither of the references discloses "....determining the identity of the first node from the de-spread signal, this is incorrect. The Beckwith reference discloses implementing a DSSS system wherein the PN code transmitted by the transmitter (node) is unique and the intended receiver (node) has the same code and de-spreading the received signal only the signal with the transmitted (stored) code is matched, thus also identifying the node transmitting the signal.
5. Applicant's arguments filed on June 23rd, 2006, in regards to Claim 8, have been fully considered but they are not persuasive. The applicant's arguments broadcasting at least one signal at random or pseudorandom intervals, this is

disclosed in the AAPA on (Page 3, Paragraph 5, lines 1-8). Furthermore, transmitting the beacon a various intervals is a matter of design choice.

6. Applicant's arguments with respect to claims 19, 22-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 5, 7-8, 32 & 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143).

Regarding to Claims 1, 3, 5, 7-8, 32, the AAPA discloses a wireless network including a plurality of nodes (Specification, Page 2, Paragraph 2, lines 1-2), a method of performing neighbor discovery (Specification, Page 2, Paragraph 4, lines 1-2), the method comprising: generating a signal at a first node for alerting other nodes in the network of the presence of the first node; broadcasting the signal from the first node; receiving the signal at a second node (Specification, Page 2, Paragraph 4, lines 1-2 & Specification, Page 3, Paragraph 4, lines 3-8) {Interpretation: All the three limitations: The generating of a signal (beacon), broadcasting from a first node and receiving at a second node are disclosed in Paragraph 4 of the AAPA. The AAPA further discloses that beacons serve to alert a

given receiving node that there may be one or more nodes in the proximity}. The AAPA further discloses the beacons to include information based on the type of wireless networking protocol being employed by the network (Specification, Page 3, Paragraph 5, lines 1-3). The AAPA further discloses the beacons are transmitted at regular intervals. However, the AAPA does not disclose the beacon signal to be a spread spectrum signal and further does not disclose calculating an energy associated with the received signal; establishing a threshold; determining whether the energy is greater than the threshold; and identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold; filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal; and transmitting a message from the second node to the first node, the message comprising information identifying the second node.

Ramanathan discloses a wireless communications network comprising a plurality of nodes (Fig. 1 & Column 1, lines 5-15 & Column 3, lines 1-13) {Interpretation: The gateway stations & non-gateway stations are nodes in a network}. Ramanathan further discloses a first station transmitting a beacon signal and a second station receiving the signal (Column 3, lines 41-46 & Column 4, lines 12-16, 49-54); calculating an energy associated with the received signal and establishing a threshold; determining whether the energy is greater than the threshold; and identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold (Column 4, lines 50-67 & Column 5, lines 21-35 & Fig.

2, element 37 & Fig. 3 & Fig. 4) {Interpretation: The affiliation procedure as described above the node receives a beacon signal transmitted from another signal and depending on the received signal strength (RSSI), and a predetermined threshold value of the RSSI, of the received signal determines if the station is a member of a cluster}. Ramanathan further discloses transmitting a message from the second node to the first node, the message comprising information identifying the second node (Column 5, lines 1-19 & Fig. 3, element 63, 67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ramanathan teaches receiving a beacon signal transmitted form a node by another node and depending on the comparison between the received signal strength and a predetermined threshold determining weather the receiving node is a member of a cluster wherein the second node transmits a message to the first node identifying the node and this is implemented in the network as described in the AAPA in the neighbor discovery process so as to increase the reliability and of discovery process which is easily implementable. However, the AAPA in view of Ramanathan does not disclose the beacon signal to be a spread spectrum signal and further filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal.

Beckwith discloses implementing a wireless local area network (WLAN) with spread spectrum technology (Column 1, lines 20-30). Beckwith further discloses multiple common types of spread spectrum systems including frequency hopping spread spectrum (FHSS) and direct sequence spread spectrum (DSSS) (Column 1,

lines 50-67 & Column 1, lines 1-20). Beckwith further discloses the IEEE 802.11 standard to support DSSS technology wherein the data or signal transmitted is spread by a PN code (Column 2, lines 1-20) {Interpretation: The reference discloses multiple networks comprising multiple nodes and communications between nodes to implement transmission of information using spread spectrum technology, therefore the data or signal transmitted in these networks would be a spread signal. Furthermore, it is inherent in a DSSS system for the transmitted signal to have a low probability of detection by an unintended receiver, since the unintended receiver does not know the PN code of the transmitted signal and therefore, the signal behaves as a noise signal}. Beckwith further discloses filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal (Column 2, lines 8-15) {Interpretation: A matched filter in a spread spectrum system performs the function of de-spreading the received signal}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Beckwith teaches a wireless network implementing a DSSS technology wherein the received signal is filtered using a matched filter and this technology is implemented in the wireless network as described in AAPA in view of Ramanathan so as to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication link between nodes during the node discovery process. Furthermore, in a wireless communications network an antenna is inherent to receive and transmit the signal. Furthermore, it is inherent in DSSS transmitting signal with a specified pseudo-random spreading

code and varying the spreading code to differentiate between different transmissions, so as to differentiate between transmissions to a particular node.

9. Claims 4, 9-12, 14-17, 19-27, 34-37, 39 & 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143) in further view of Proctor (PG-PUB 2004/0196822).

Regarding to Claims 4 & 19-27, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. However, AAPA in view of Ramanathan in further view of Beckwith does not disclose identifying a directional antenna for transmitting the message.

Proctor discloses a method for transmitting data in a wireless communications network (Abstract, lines 1-3 & Page 1, Paragraphs 3-4). Proctor further discloses the radio units in the network comprising the antenna system to be implemented in multiple detection modes omni-directional mode and a directional mode (Page 1, Paragraphs 9-12). The omni-directional mode is implemented when the received signal has not been identified and once the terminal is located the radio is in a directional mode (Page 1, Paragraphs 9-12). Therefore, it would have been obvious

to one of ordinary skill in the art at the time of the invention that Proctor teaches implementing radio units in multiple antenna modes and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to provide a reliable communication link between nodes since the transmission/receiving energy is focused, thus satisfying the limitations of the claims.

Regarding to Claims 9, 12, 14, 17, 34-36, 39 & 41, the AAPA discloses a network comprising a plurality of nodes (Specification, Page 2, Paragraph 2, lines 1-5), a first node comprising: a transmitter configured to broadcast a beacon signal (Specification, Page 2, Paragraph 2, lines 1-5 & Specification, Page 2, Paragraph 4, lines 1-2 & Specification, Page 3, Paragraph 4, lines 3-8) {Interpretation: The AAPA discloses all the nodes may be equipped with wireless communications transceivers which include a transmitter and receiver}. However, the AAPA does not disclose a processor configured to generate a spreading sequence that identifies the first node and a receiver configured to receive a message from a second node, the message identifying the second node and indicating that the second node is a neighbor node; wherein broadcasting the spreading sequence using an omni-directional antenna and transmitting data to the second node using a directional antenna.

Ramanathan further discloses transmitting a message from the second node to the first node, the message comprising information identifying the second node (Column 5, lines 1-19 & Fig. 3, element 63) {Interpretation: The affiliation procedure as described above the (second) node receives a beacon signal transmitted from another (first) node and determine if the station is a member of a cluster wherein the

second node sends an affiliation request message}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ramanathan teaches receiving a beacon signal transmitted form a node by another node and depending on the comparison between the received signal strength and a predetermined threshold determining weather the receiving node is a member of a cluster and this can be implemented in the network as described in the AAPA in the neighbor discovery process so as to increase the reliability and of discovery process which is easily implementable. However, the AAPA in view of Ramanathan does not disclose the beacon signal to be a spread spectrum signal; wherein broadcasting the spreading sequence using an omni-directional antenna and transmitting data to the second node using a directional antenna.

Beckwith discloses implementing a wireless local area network (WLAN) with spread spectrum technology (Column 1, lines 20-30). Beckwith further discloses multiple common types of spread spectrum systems including frequency hopping spread spectrum (FHSS) and direct sequence spread spectrum (DSSS) (Column 1, lines 50-67 & Column 1, lines 1-20). Beckwith further discloses the IEEE 802.11 standard to support DSSS technology (Column 2, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Beckwith teaches a wireless network implementing a DSSS technology and this technology can be implemented in the wireless network as described in AAPA in view of Ramanathan so as to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication

link between nodes during the node discovery process. However, AAPA in view of Ramanathan in further view of Beckwith does not disclose broadcasting the spreading sequence using an omni-directional antenna and transmitting data to the second node using a directional antenna.

Proctor discloses a method for transmitting data in a wireless communications network (Abstract, lines 1-3 & Page 1, Paragraphs 3-4). Proctor further discloses the radio units in the network comprising the antenna system to be implemented in multiple detection modes omni-directional mode and a directional mode (Page 1, Paragraphs 9-12). The omni-directional mode is implemented when the received signal has not been identified and once the terminal is located the radio is in a directional mode (Page 1, Paragraphs 9-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Proctor teaches implementing radio units in multiple antenna modes and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to provide a reliable communication link between nodes since the transmission/receiving energy is focused, thus satisfying the limitations of the claims. Furthermore, it is inherent in CDMA (digital wireless) communications systems for a processor to generate the spreading codes, and a computer-readable medium having stored a plurality of sequences of instructions for performing communications.

Regarding to Claims 10-11 & 15-16 & 37, AAPA in view of Ramanathan in further view of Beckwith in further view of Proctor discloses a first node comprising an omni-

directional and a directional antenna; a processor to generate spreading code that identifies a first node; a transmitter configured to transmit the spreading code using the omni-directional antenna and transmit data to the second node using a directional antenna after the message is received from the second node; and a receiver configured to receive a message from the second node as described above. The AAPA further discloses broadcasting includes at least one of: broadcasting the signal at regular intervals, broadcasting the signal at random or pseudorandom intervals, and broadcasting the signal using a combination of regular and random or pseudorandom intervals (Specification, Page 3, Paragraph 5, lines 6-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Ramanathan in further view of Beckwith in further view of Proctor satisfies the limitations of the claim. Furthermore, it is inherent in DSSS transmitting signal with a specified pseudo-random spreading code and varying the spreading code to differentiate between different transmissions, so as to differentiate between transmissions to a particular node.

10. Claims 23, 31 & 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143) in further view of Asghar et al. (6,218,931).

Regarding to Claims 23, 31 & 33, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon

from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. However, the AAPA in view of Ramanathan in further view of Beckwith does not disclose a processor configured to generate a spreading sequence that identifies a node.

Asghar discloses a code division multiple access (CDMA) network comprising multiple nodes wherein each node further comprises a transmitter and receiver (Abstract, lines 1-6 & Column 3, lines 1-5 & Column 5, lines 26-55 & Fig. 1 & Fig. 5). Asghar further discloses the network using a unique spreading code for each node in the network (Abstract, lines 19-25 & Column 2, lines 3-5, 28-30, 32-40 & Column 3, lines 37-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Asghar teaches implementing a spreading code unique to a node and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to be able to provide increased noise immunity and to be able to identify the node from which the signal is transmitted.

Allowable Subject Matter

11. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sudhanshu C. Pathak
Examiner
Art Unit 2611